National Aeronautics and Space Administration

EXPLORE SCIENCE

Research Program Innovations

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Key Points

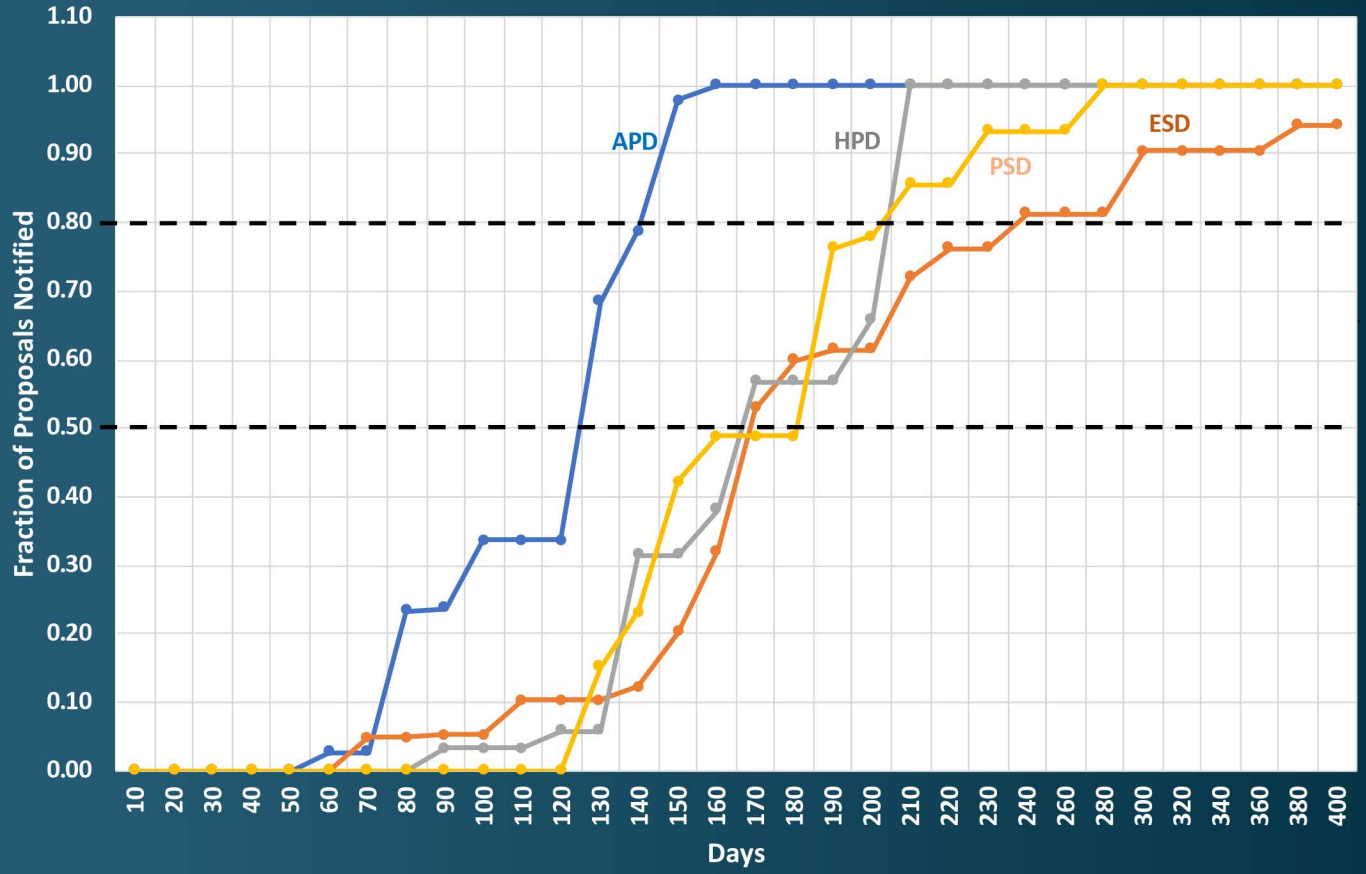
- Selection rates for the 2018 Research and Analysis Programs of most divisions are between 25-30%.
- Half of all proposals have their status announced within 150 days after proposal submission; most divisions, though, take at least 200 days to notify 80% of submitted proposals.
- Between 1/3 and 2/3 of selected PIs are new to the solicitation in which they have been selected.
- To mitigate issues of unconscious bias in peer reviews, all Astrophysics Guest Observer (GO) programs will use *dual-anonymous peer review* processes. SMD is trialing this approach on four non-GO programs in ROSES 2020.
- To reinforce SMD's interest in high-risk/high-impact research proposals, a new process will be implemented in ROSES 2020 to ensure that such proposals are carefully considered.
- To broaden participation in SMD's flight programs, the first PI Launchpad is taking place, now.

Research and Analysis (R&A) Program Metrics, by Division

ROSES Year	Division	# Proposals Evaluated	# Proposals Selected	Overall Selection Rate	# New Selected PIs	Fraction of Selectees Who Are New	Approx Time from Submission to Selection for 50% of Proposals (d)	Approx Time from Submission to Selection for 80% of Proposals (d)
2018	APD	1370	371	27%	167	45%	125	140
2018	ESD	1095	311	28%	175	56%	170	240
2018	HPD	613	154	25%	69	45%	160	205
2018	PSD	1368	282	21%	97	34%	180	205

- With the exception of PSD, all divisions have selection rates between 25- 30%
- Between 1/3 and 2/3 of new selections have PIs who weren't the PI on a proposal selected in the previous five years.
- APD announces selections considerably faster than the other divisions. Other divisions take >200 days to notify 80% of proposers.

Distribution of Time from Submission to Selection (Proposals)

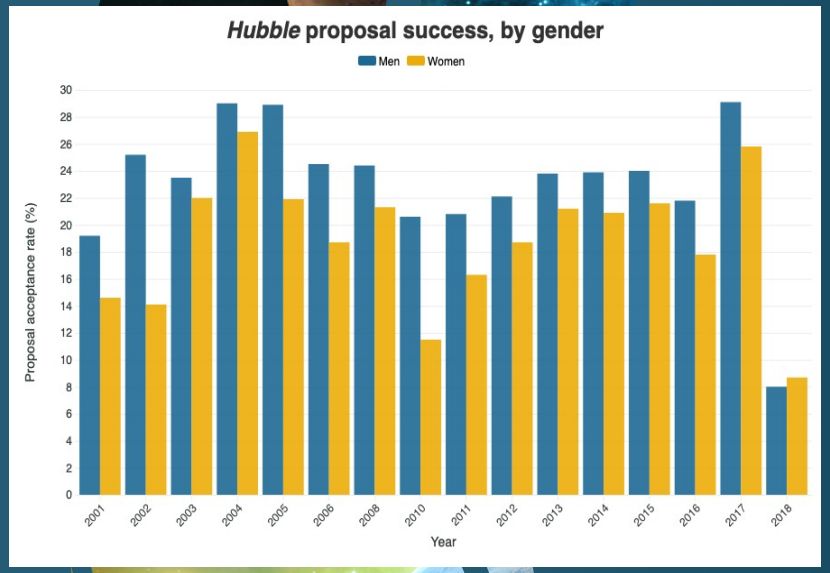


	APD	ESD	HPD	PSD
Q1	3	8	3	4
Q2	9	2	2	2
Q3	7	17	6	10
Q4	4	16	10	5

Pilot Studies for ROSES 2020

- To improve our R&A program, SMD will be conducting two pilot studies:
  - Dual-Anonymous Peer Review
  - Special process for high-risk/high-impact proposals
- Either or both may fail and that is acceptable. Excellent organizations constantly try to adapt and learn.

Dual-Anonymous Peer Review



- Is it possible and value-added to remove information about the identity of the proposers and their institutions from reviewers when they are evaluating the scientific merit of proposals?
- STScI has pioneered this approach for Hubble Space Telescope (HST) observing time and found that their implementation reduced gender, seniority, and institutional biases in the evaluations.
- STScI's approach turns evaluations into a two-part process:
  - Part 1: Panel evaluates science merit, *etc.,* without obvious information about the identities and affiliations of the team.
  - Part 2: After all proposals are evaluated, panels provided with the identities and affiliations of proposers and have the panel comment on the qualifications of the team to perform the proposed research.

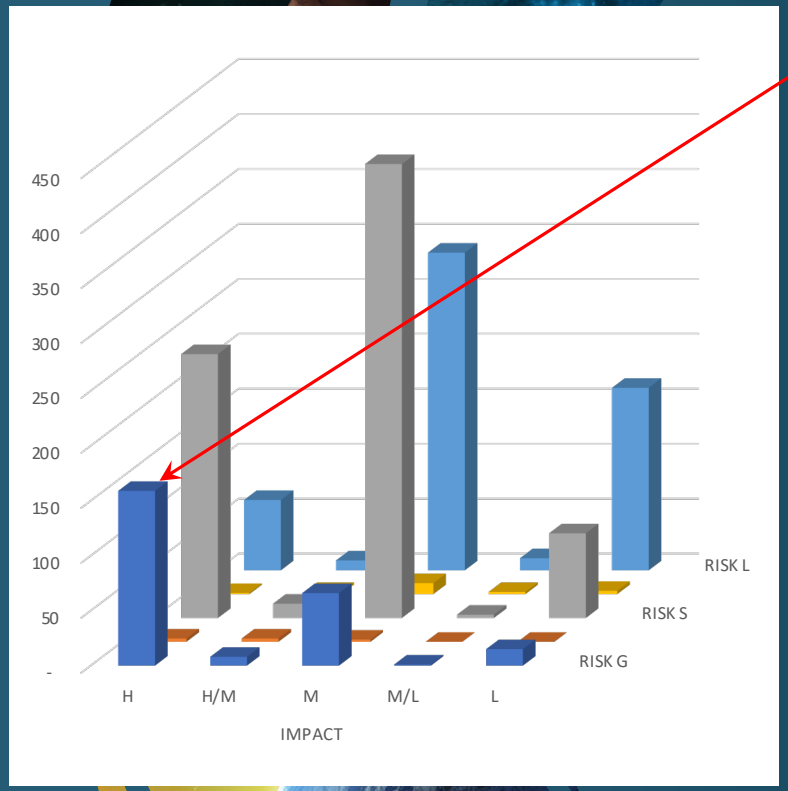
Dual-Anonymous Peer Review (2)

- All APD Guest Observer (GO) programs will be adopting the STScI HST approach starting with their calls for proposals in ROSES 2019
- SMD will conduct a pilot study using four ROSES 2020 program elements (50-150 proposals, range of methodologies)
  - Astrophysics Data Analysis
  - Earth Science US PI Program
  - Heliophysics Guest Investigators
  - Habitable Worlds

Dual-Anonymous Peer Review (3)

- Program officers of the test programs and NRESS staff are working on a team led by Dr. Dan Evans (APD) to:
  - develop a process for Dual Anonymous Peer Review (DAPR);
  - determine how we will do Conflict of Interest (COI) checks;
  - prepare guides for proposers/reviewers;
  - lead development of any NSPIRES hacks needed; and,
  - develop measures of success.

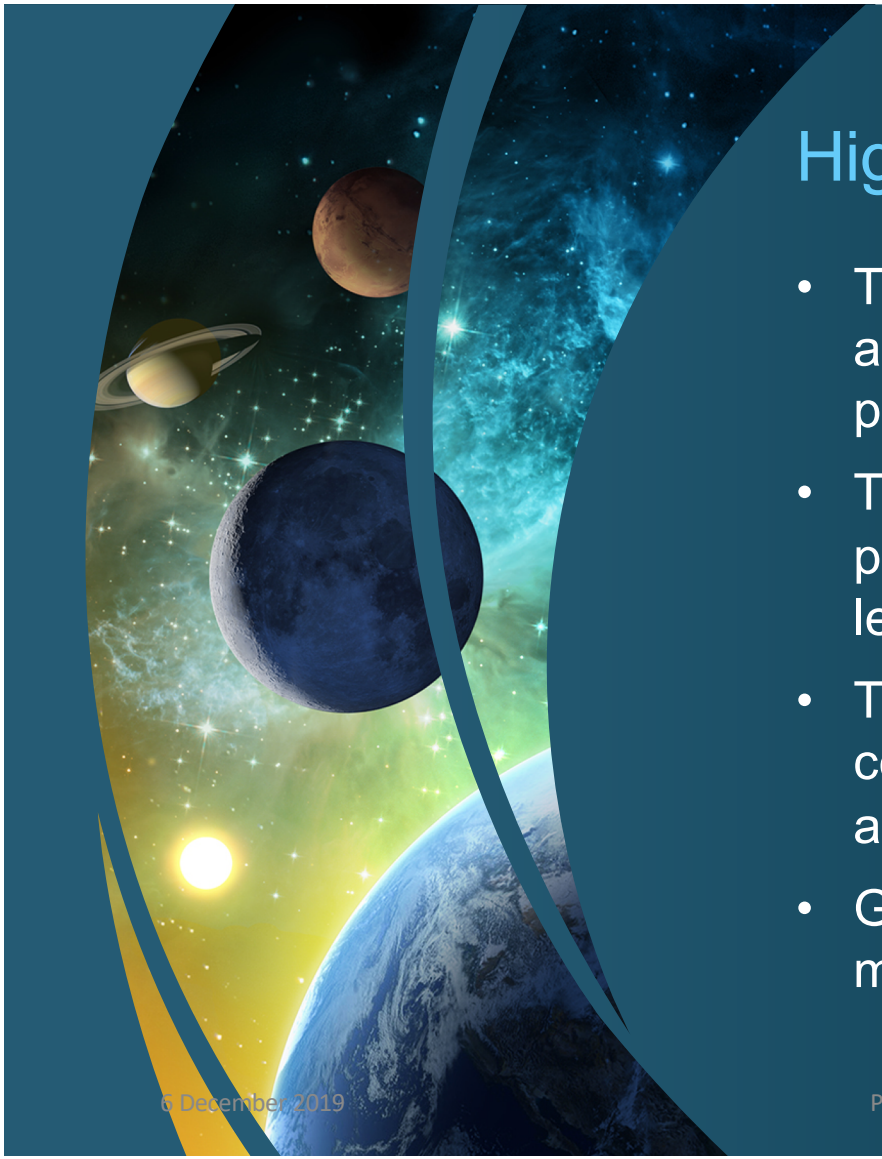
High-Risk/High-Impact Research (1)



- Results of the High-Risk/High-Impact (HR/HI) study performed in 2018 showed that about 10% of the reviewed proposals were deemed by panelists to be high-risk and high-impact.
- We also found that such proposals were selected at a higher-than-average rate (34% *vs.* 24%).
- Nevertheless, the community believes that NASA peer review is hostile to HR/HI research.
- To begin to reset this belief, we will try out a new process.
  - Process is intended to be lightly burdensome on reviewers and Program Officers.

High-Risk/High-Impact Research (2)

- Two new text boxes will be added to the NSPIRES cover pages:
  - Short description of why proposed research would be high-impact.
  - Short description of why proposed research is high-risk.
- Panels will be charged with reading the justifications and simply saying whether they agree or not with the arguments presented (verification).
- Some of the verified HR/HI proposals will be selected on their own.
- Verified HR/HI proposals that were not selected will be given a second chance.

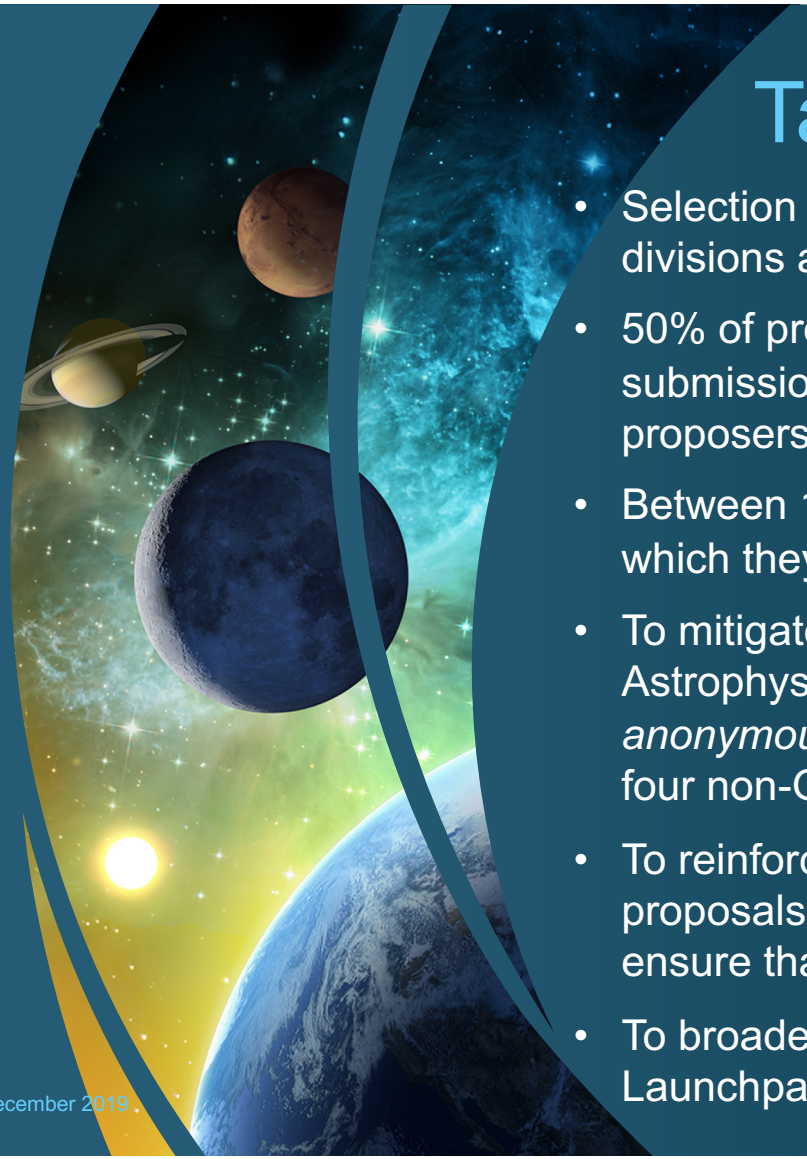


High-Risk/High-Impact Research (3)

- Three times a (ROSES) year, each Division will be able to put forward 3 unselected, verified HR/HI proposals.
- These proposals will be evaluated solely on their potential impact and intellectual risk by a high-level panel.
- The results of this second panel will be communicated to the SMD AA who will then select a small number of proposals to be funded.
- Goal is to select proposals that are HR/HI and that may have been poorly reviewed because of it.

First “PI Launchpad”

- Aimed at researchers and engineers who would like to submit a NASA space mission proposal in the next few years but don’t know where to start.
- Two-and-a-half day, interactive workshop to held in Tucson, AZ on Nov. 18-20.
- Very competitive application process. Selected ~40 participants. All costs paid for thanks to a grant from the Heising-Simons Foundation to our partner, the University of Arizona.
- Goals:
  - Lead participants from science question to draft requirements, STM, *etc.*
  - Provide first exposure to how to choose partners, assemble teams, *etc.*
  - Provide networking opportunities with mission managing organizations, spacecraft providers and each other.
- Targeting Spring CY2020 at the University of Michigan for the next Launchpad.



Take-aways

- Selection rates for the 2018 Research and Analysis Programs of most divisions are between 25-30%.
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